Claims

1. A rotary apertured interferometric lithography (RAIL) system comprising an interferometric tool, a rotating stage and a mask having an aperture that creates a servo pattern in a master for magnetic-contact printing.

2. The RAIL system of claim 1, wherein the servo-pattern tracks a recording-head trajectory of a hard disk drive.

3. The RAIL system of claim 1, further comprising a phase shifter that controls a position of an interference fringe.

4. The RAIL system of claim 1, wherein the aperture is an arc-shaped slit.

5. The RAIL system of claim 1, further comprising a laser beam.

6. The RAIL system of claim 5, wherein the system forms a trackpitch determined by a wavelength of a laser of the laser beam and an incident angle of the laser beam.

7. The RAIL system of claim 1, wherein the master has a feature having a size of less than 0.35 micron and a standard deviation of a period of the feature of less than 1 nm.

8. A master comprising a feature having a period, wherein a standard deviation of the period is less than 1 nm and the master is a master for magnetic-contact printing.

9. The master of claim 8, wherein the master contains a servo-pattern that tracks a recording-head trajectory of a hard disk drive.

10. The master of claim 9, wherein the feature has a size of less than 0.35 micron.

11. A method of manufacturing a master comprising applying a resist to a substrate, patterning the resist by interferometric lithography to form a patterned resist, and depositing a metal on the patterned resist, wherein the master has a feature having a standard deviation of a period of the feature of less than 1 nm and the master is a master for magnetic-contact printing.

12. The method of claim 11, wherein the depositing a metal comprises sputtering depositing a metal layer and subsequently electroplating a metal film on the metal layer.

13. The method of claim 11, wherein the patterning the resist comprises exposing the resist to a laser beam and developing the resist.

14. The method of claim 11, wherein the patterned resist contains depressions of different depths.

15. The method of claim 11, wherein the feature has a size of less than 0.35 micron.

16. A method of forming a servo-sector in a magnetic disk medium comprising contacting a master having a feature having a standard deviation of less than 1 nm to the magnetic disk medium and exposing the master to a magnetic field.

17. The method of claim 16, wherein the exposing the master to a magnetic field creates a magnetic pattern in a magnetic layer of the magnetic disk medium.

18. The method of claim 17, wherein the magnetic pattern has a standard deviation of less than 1 nm.

19. The method of claim 18, wherein the magnetic pattern has a size of less than 0.35 micron.